



UNITED STATES NAVY

MEDICAL NEWS LETTER

Rear Admiral Bartholomew W. Hogan MC USN - Surgeon General
 Captain Leslie B. Marshall MC USN (RET) - Editor

Vol. 33

Friday, 19 June 1959

No. 12

TABLE OF CONTENTS

| | |
|------------------------------------------------------------------------|----|
| Fractures of the Shaft of the Tibia | 2 |
| Malignant Disease of the Head and Neck in Childhood | 6 |
| Bacterial Endocarditis in the Antibiotic Era | 8 |
| Benign Hypertension | 10 |
| Adrenocortical Steroid Therapy | 12 |
| Emotional Disorders of Pregnancy | 14 |
| Trachoma in Northern Australia | 17 |
| Medical Aspects of Missile Operations | 19 |
| Training in ABC Warfare for Medical Officers | 20 |
| Direct Appointments - Naval Reserve MSC | 21 |
| From the Note Book | 21 |
| Gift Books for the Edward R. Stitt Library - Naval Medical School..... | 23 |
| Recent Research Reports | 23 |
| Navy Disease Vector Control Centers (BuMed Inst. 6200.9A) | 25 |
| Reserve Training - War Emergency Surgery (BuMed Notice 1550) | 26 |
| Processing Navy Internal Audit Reports (BuMed Inst. 7540.1) | 26 |

DENTAL SECTION

| | |
|-------------------------------------------------------|----|
| Financial Aid for Philippine Dental Association | 27 |
| High Speed Cavity Preparation | 27 |

RESERVE SECTION

| | |
|--------------------------------------------------------|----|
| Reserve Officers as Commandants' Representatives | 29 |
| Seminar for Commandants' Representatives | 30 |

AVIATION MEDICINE SECTION

| | |
|-----------------------------------------------------------|----|
| Physical Evaluation Procedure | 31 |
| Arctic Testing of Navy's Mark IV Full Pressure Suit | 31 |
| Human Quality Control in Naval Air Training | 33 |
| Peer Ratings | 35 |
| Aerospace Medical Association Meeting | 39 |

Policy

The U. S. Navy Medical News Letter, is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

* * * * *

Fractures of the Shaft of the Tibia

Fractures of the shaft of the tibia are notoriously difficult to treat. A study of the patients treated at the Toronto General Hospital and Sunnybrook Military Hospital over a 9-year interval supports this view. Three hundred and sixty-eight cases of simple and compound fractures were analyzed; of these, only 16% were united within 3 months and only 62% were united in 6 months. Even after 18 months, 2% were still un-united and 2% had required amputation. A review of the literature revealed that other centers had also recognized the difficulties inherent in the treatment of fractured tibias and were facing the same problems.

Injection studies of the vascular network of the tibia revealed three main sources of blood supply: the nutrient artery, the metaphyseal vessels, and the periosteal vessels.

The periosteal vessels are derived from the main vessels of the limb and run transversely to the long axis of the bone. These transverse branches anastomose freely with each other and with arteries supplying the surrounding muscles.

Although the periosteal vessels may be of little significance in the nutrition of the resting adult tibia, they are of vital importance following fracture. The nutrient vessels run longitudinally, and when the bone is broken experimentally with complete interruption of the endosteal circulation, the distal fragment becomes avascular. The periosteal blood supply, however, is intact on both sides of the fracture line because the periosteal vessels run transversely to the long axis of the bone. Following interruption of the endosteal circulation to the distal fragment, the distal endosteal callus forms at some distance from the fracture site and takes a long time to unite with the endosteal callus of the proximal fragment; whereas, periosteal callus forms rapidly and quickly seals the fracture gap. These periosteal vessels perform another

important function by assisting in the revascularization of the distal fragment. In so doing, they help to restore the distal endosteal circulation and thereby assist in the production of endosteal callus distal to the fracture.

If the periosteum is destroyed, there is difficulty in restoring the endosteal circulation of the distal fragment, distal endosteal callus forms at a considerable distance from the fracture site, there is no periosteal seal to close the gap, and, ultimately, fibroblasts derived from the injured soft tissues spread between the bone ends and produce a fibrous union.

The cases in this series were divided into four age groups: zero to 16, 16 to 30, 30 to 60, and 60 plus. Under the age of 16, union was found to be rapid—a fact which has been corroborated by many other reviews. In the other three age groups, although there is more callus formation in the younger ages, there is no significant difference in the time of union.

It is commonly accepted that fractures involving the lower third of the tibia are slow in uniting; it has been suggested that the reason for delayed union at this site lies in the poor vascularity of this part of the bone.

The apparent indolence of fractures of the lower third of the tibia would appear to be dependent on other factors than vascularity. To investigate this further, all cases with complications were excluded and seventy-two closed fractures of the tibia which successfully united on conservative treatment were analyzed. In this group, it was found that the average time of union was between 17.1 and 17.7 weeks, regardless of site.

The innocuous character of the lower third of the tibia is further emphasized by the fact that in this series bone-grafting procedures were more frequently performed for fractures in the middle third than in the lower third.

In the sixty-seven cases referred to this Center as problems in management, it was found that no one site was particularly troublesome.

Therefore, it can be reasonably concluded that the site of fracture has no influence on the rate of healing, and disrepute of fractures of the lower third is due to other factors. The lower third of the tibia is not surrounded by muscles and severe displacement of the fragments occurs with greater frequency here than at other sites. The periosteum, divested of supporting muscle, is likely to be stripped and shredded by such displacements. It is suggested that the greater incidence of associated soft tissue injury found in fractures of the lower third of the tibia accounts for the tardy healing and that the site by itself is of little importance.

There were 188 cases of simple fractures of the tibia of which 97 were treated by closed methods and 91 by open reduction and internal metal fixation.

An analysis was made to compare the rate of union and incidence of complication in comparable fractures whether treated by closed or open reduction. In all instances, with one exception (markedly displaced spiral oblique fractures), union was more rapidly achieved when closed reduction was employed and the incidence of complications was less. The more extensive the operative procedure, the slower the rate of union and the greater the incidence of

complication. This fact was convincingly demonstrated by a study of fractures treated by metal plates. Plates were employed in 14 instances and in 8 (57%), further operative treatment was required. In all cases showing marked initial displacement and treated by plates, bone grafting was required at a later date.

Findings of the analysis support the largely forgotten dictum that open reduction should be reserved for those cases in which closed manipulation fails to obtain or maintain the reduction.

One hundred and seven cases of compound fractures were available for review; 64 cases were treated conservatively and 43 were treated by internal fixation. The difficulties inherent in the management of this particular type of tibial fracture are well exemplified by the fact that in 13 (12.3%) osteomyelitis developed; of those who escaped infection, 22 (23.4%) required bone grafts. Of the 13 cases in which osteomyelitis developed, 12 were still ununited in 6 months and 8 had bone-grafting procedures performed at subsequent dates.

Even if fractures in which osteomyelitis developed were excluded, only 66% of compound fractures were united within 6 months, whereas in the same period of time 86% of closed fractures were united.

The major complications considered in this review were osteomyelitis, non-union, and delayed union. As expected, there was a higher incidence of complications in the group of compound fractures. Complications developed in 53% of the compound fractures treated conservatively and 45% of those treated operatively. The complication rate also rises when closed fractures are treated operatively. Closed fractures treated conservatively showed an 11% complication rate rising to 24% with operative intervention.

The authors believe that this study has demonstrated the importance of an intact periosteum in tibial fractures. There can be no doubt that the severity of the associated soft tissue injury markedly influences the rate of union as shown by the close correlation between the degree of initial displacement of the fracture fragments and the time taken for union to occur; and also by the tardiness of union in noninfected compound fractures with severe soft tissue injury. It might almost be said that, in the treatment of a fracture, the most important factor is consideration of the periosteum.

Two other points were repeatedly demonstrated: the efficacy of bone grafting and the hazards of extensive operative procedures.

Bearing these points in mind, it is suggested that closed reduction is the treatment of choice for closed fractures. In this series, a surprisingly high percentage of simple fractures were treated by internal fixation (52%). This might have been due to the fact that in many cases the initial attempt at closed reduction was frequently performed in a perfunctory manner in an operating room set up for open procedures. If closed reduction is to be attempted, it should be well done, and indeed, requires more skill than an open reduction.

There is one exception to the general rule of closed reduction of closed fractures. The authors' results confirm the findings of White that moderately to markedly displaced spiral oblique fractures are more satisfactorily treated by screw fixation.

In those cases in which an adequate attempt at closed reduction has failed to obtain or maintain reduction, open fixation may be indicated. Here it must be remembered that the major indication for operation is to prevent significant deformity. The definition of "significant" deformity requires further research. The decision to perform an open reduction should be made within 14 days because by this time the normal processes of fracture healing are well established, and it is believed that operative intervention after 14 days has a retarding influence on union.

If operative treatment is necessary, it should be performed as soon as possible, and the surgeon should minimize the amount of soft tissue trauma needed to obtain apposition of the bone fragments. Extensive operating at any time should be avoided. As mentioned, screw fixation affords a minimal amount of soft tissue trauma and should be used when possible. Lottes intramedullary nails are useful in the treatment of unstable transverse fractures. When possible, they should be inserted using the blind technique to avoid damage to the periosteum. In this series, the use of metal plates was associated with an alarmingly high incidence of complication. Cortical wiring is an inefficient method of fixation, usually involving extensive exposure and should be avoided. The excellent results obtained from primary grafting suggest that, if extensive exposure of the fracture site is necessary the internal fixation should be reinforced by onlay cancellous grafts. The indications for bone-grafting procedures are reviewed in this article.

Compound fractures present not only the well known hazard of osteomyelitis, but also the frequent complication of delayed union. These studies suggest that close apposition of the bone fragments is advantageous if severe periosteal damage is suspected. However, this should be done with a minimal amount of further soft tissue trauma. (Jackson, R.W., Macnab, I, Fractures of the Shaft of the Tibia: A Clinical and Experimental Study: Am. J. Surg., 97: 543-556, May 1959)

* * * * *

Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

* * * * *

Malignant Disease of the Head and Neck in Childhood

The later decades of life are commonly those associated with malignant disease of the head and neck. The development in recent times of antibiotics and the widespread utilization of prophylaxis in the modification or prevention of the contagious diseases of childhood have resulted in a major change in the nature of the disorders producing pediatric morbidity and mortality. No longer do the infectious diseases and their complications occupy the preeminent role as the cause of death in infants and children. At present, excluding accidents, malignant neoplastic disease results in more deaths in the 4 to 15-year age group than any other single cause.

Just as tumor problems in general are more widely recognized as a critical source of pediatric disease, tumors in the regional area above the clavicles also are surpassing in importance certain of the more benign problems. A critical reevaluation of such disease in the head and neck may suggest certain definitive therapeutic procedures which offer some hope in the management of situations often considered to be totally unsalvageable.

There are two misconceptions associated with the treatment of malignant disease in childhood. The first stresses the insignificance of the problem. The preeminent position of malignant tumors as the cause of pediatric mortality belies this thesis. The second misconception is one which presupposes the futility of any management of such malignant disease. While the outlook is not ideal, application of certain principles of management has resulted in the salvage of a fair percentage of children so afflicted.

There were 48 patients whose tumor masses presented a pathologic picture consistent with sarcoma. In this group, there was almost an even distribution as to sex, with 27 male and 21 female patients. The age distribution was somewhat different as the incidence rose with age. In the 0 to 4-year age group, there were 12 patients; in the 5 to 9-year group, 15 patients; and in the 10 to 15-year group, 21 patients.

In contrast with the tumors encountered in the head and neck in the adult population, the carcinomas in children account for only about one-third of the malignant disease in this area. Along this line, the carcinomas develop in the later years of childhood. None appeared under the age of 5 years. There were 7 in the 5 to 9-year age group and 15 in the 10 to 15-year group. On the other hand, the sex distribution was approximately equal with 10 male and 12 female patients developing tumors.

The most striking feature of the malignant disease process in children—in contrast with that in adults—is the preponderance of sarcomas over tumors of epithelial origin. Dargeon and associates found this to be true for malignant disease in general in childhood; this report confirms a similar finding in the head and neck area. Helmholz found that 97% of malignant disease in childhood was of sarcomatous origin, in contrast with 90% for carcinoma in the adult.

Presumptive diagnosis cannot be entertained with children any more than with adults. The authors treated two "inoperable mandibular tumors" classified on a roentgenologic basis as osteogenic sarcomas. Biopsy and curettage were sufficient to eliminate the continued morbidity and anticipated mortality of the eosinophilic granulomata.

It is of the utmost importance that the misconception that malignant disease in childhood is almost universally fatal be dispelled. Certain histologic types of tumors such as the rhabdomyosarcoma, do have essentially a universally fatal outlook. This, fortunately, is not true of all malignant disease. Fibrosarcomas and the neurofibrosarcomas, when recognized early and adequately treated by proper definitive management, in general, have a rather favorable outlook. In this particular series, 6 of 8 patients with fibrosarcoma and 3 of 4 with neurofibrosarcoma are living and well without evidence of disease from one to 14 years following treatment. Five of the 12 patients have survived free of disease over 5 years. Even with some less favorable lesions, such as the lymphomas and the neuroblastomas, occasional long-term survivals free of disease have been obtained when adequate definitive treatment has been undertaken early in the course of the disease. It might be said that with the majority of tumors the salvage rate could be expressed as a function not so much of the cell type as of the alertness of the physician to the possibility of the diagnosis of malignant disease and the prompt institution of adequate proper management without sentimental modification.

While carcinomas are not as common in head and neck as the sarcomas, cases of the former still present a statistically significant group. Thyroid carcinoma was the most frequent tumor of this type encountered in this series. While it is true that the mortality rate associated with thyroid carcinoma is not as high as with many other types of lesions, inadequate management leads to a coexistence with tumor which the authors prefer to avoid if possible. Two of 14 patients with carcinoma of the thyroid are living with disease while the remainder are free of disease from one to 17 years following treatment.

Squamous-cell carcinoma—so common in the adult—is unusual in childhood, but Moore was able to collect over 40 authenticated cases from the world literature. One patient in this series with a squamous-cell carcinoma of the gingiva is living and well almost 5 years following a radical local excision of the hard palate, alveolar ridge, and a portion of the maxilla. Another patient with a squamous-cell carcinoma of the antrum died within a year of his disease.

The association of irradiation with the development of malignant disease in childhood in general, and specifically with the thyroid carcinoma, has been the subject of widespread discussion in recent years. In this study of thyroid cancer (10 of which have been previously reported elsewhere), 10 of 14 patients had received previous irradiation. In no instance was the dosage less than 200 r.

Broadly speaking, the prognosis associated with malignant disease in childhood is not nearly as serious as is generally believed. A few years ago,

Pack and Ariel reported a 42% 5-year survival free of disease in 39 determinant cases of sarcoma of soft somatic tissues. In this series, while any individual group is too small for statistical evaluation, a reasonably good prognosis can be anticipated in those lesions in which the histologic type or anatomic location permits early adequate definitive management.

Dargeon emphasized that in the first 5-year age group the potential salvage can be higher than that for any other segment of the childhood period. Therefore, it is imperative that the possibility of malignant disease be kept in mind by all who undertake the treatment of infants and children, and that any mass which is suspect of an anaplastic process be subjected to accurate diagnostic measures and, where indicated, to prompt, definitive, and adequate management. (Southwick, H. W., Slaughter, D. P., Majarakis, J. D., Malignant Disease of the Head and Neck in Childhood: A.M.A. Arch. Surg., 78: 22-31, May 1959)

* * * * *

Bacterial Endocarditis in the Antibiotic Era

The 228 patients who form the basis for this report comprise all cases with bacterial endocarditis admitted to the Massachusetts General Hospital since 1944. The criteria for diagnosis were a clinical picture compatible with bacterial endocarditis and at least two positive blood cultures, or a pathologic diagnosis postmortem. There were 15 of 119 successfully treated patients who had negative blood cultures, but presented the characteristic clinical features of this disease.

The 228 patients may be divided for convenience into three major groups: (1) those with acute bacterial endocarditis (53 cases); (2) those with subacute bacterial endocarditis who died during hospitalization (56 cases); and (3) those with subacute bacterial endocarditis treated successfully (119 cases).

The patients with acute bacterial endocarditis were somewhat older than the subacute cases, with an average age of 55 years ranging from 8 months to 85 years. They were equally divided as to sex. Staphylococcus aureus, the predominant organism, was found in 31 instances (60%).

In nearly one-half (25) of the acute cases, there was no apparent pre-existing cardiac disease or defect. Rheumatic valvular disease was found in 18 instances, calcific aortic stenosis in 6, bicuspid aortic valve in 2, syphilitic aortitis in one, and a ventricular septal defect in one.

Of the 175 patients with subacute bacterial endocarditis, there were 96 males and 79 females; the ages ranged from 2-1/2 years to 96, with an average of 42. In the 119 cured cases, rheumatic heart disease was present in 105 and congenital heart disease in 14. Streptococcus viridans was isolated in 87 (73%). The usual treatment was parenteral penicillin for at least 3 weeks, often for 4

weeks or longer, and penicillin combined with other antibiotics in special instances.

Forty-eight of the 56 patients who died had postmortem examination. Twenty-nine were afflicted with *Streptococcus viridans*; in 18 patients, no organism was isolated. Rheumatic heart disease was present in 38 of the fatal cases, whereas in 8 instances, there had apparently been no antecedent valvular disease as far as clinical history or postmortem examination could disclose.

Acute bacterial endocarditis remains an ominous and often fatal disease. In only 21 patients, was the presence of an acute bacterial infection on the heart valve recognized before death; 8 of these survived. Even when the disease was recognized clinically, death often ensued before an adequate antibiotic program could be instituted.

In the subacute group, 119 patients (68%) recovered and 56 (32%) died. Postmortem examination in 48 of the 56 revealed that the principal cause of death in one-half of the cases was either rupture of a mycotic aneurysm or valve cusp or an embolus to a cerebral or coronary vessel. In the postmortem group, the presence of bacterial endocarditis was unsuspected in 25. Therefore, the "cure rate" in those actually treated was 79%.

Of the 119 patients who recovered, 60 patients have been followed for 5 years with a 69% survival rate, and 23 for 10 years with 49% survival rate. Only one patient has been "lost." The principal cause of death in the years after cure of bacterial endocarditis has been congestive failure.

In the 119 original survivors, 16 had a high degree of aortic regurgitation, clearly augmented by their disease in 8 instances and necessitating a Hufnagel valve in 5. Embolic episodes unrelated to active infection occurred later in 9 patients, and arterial aneurysms were found at a later date in 2. A recurrence of bacterial endocarditis from 6 months to 10 years after the original infection occurred in 10 patients (8.5%), 8 of whom again had *Streptococcus viridans* infection and were rescued, whereas 2 had *Staphylococcus aureus* and succumbed.

Postmortem examination was done in 17 patients with healed bacterial endocarditis who later died. In 12 of the 17 cases, a severe degree of structural damage was found to be the result of the healing process. These alterations were responsible for a variety of special syndromes now recognized as peculiar to the antibiotic era. Notable in this group was aortic regurgitation of unusually high degree, frequently associated with left ventricular failure and angina pectoris. In other instances, the abrupt onset of congestive failure heralded the rupture of a weakened valve cusp. Some patients were never well again, and their insidious decline and ultimate death resulted from one or more factors including valve distortion, diffuse myocardial injury, and occasionally a reactivation of rheumatic fever. In a few instances, a fatal embolus occurred.

In concluding this survey of bacterial endocarditis in the antibiotic era, three special features remain for further study and clarification. First in

importance is the prevention of rheumatic and, possibly, of congenital heart disease, thereby eradicating the cardiac lesions most susceptible to bacterial invasion. Second, the protection of patients with these lesions during dental and other surgical procedures is vital; although the currently recommended programs for this purpose seem adequate in the majority of instances, the optimal antibiotic dosage and the duration of administration remain to be settled. Third, the emergence in recent years of increasing numbers of organisms resistant to presently available antibiotics poses a most serious and urgent problem. (Morgan, W. L., Bland, E. F., Bacterial Endocarditis in the Antibiotic Era - With Special Reference to the Later Complications: *Circulation*, XIX: 754-762, May 1959)

* * * * *

Benign Hypertension

Perhaps no other variation in the physiologic functions of the body has been subjected to as much investigation as has the blood pressure. The search for the cause of hypertension continues while newly discovered methods of therapy in hypertensive disease are being made available to those having this condition. Master, et al., defined hypertension, concluding that prior to 1952 the concepts were incorrect or misleading in that the critical levels established to divide normal from abnormal blood pressure were too low. The wide variations in blood pressure levels in a selected group of 1522 patients with essential hypertension were observed over a long period by Hines. Clinical hypertensive disease frequently developed among his subjects if the diastolic pressure was greater than 85 mm. Hg. Among the first observers to report on variable blood pressure and its apparently adverse effect on morbidity and mortality were Levy, et al., in their studies on Army officers. Variable or so-called labile blood pressure has sometimes been regarded as an interesting physiologic phenomenon without serious implications.

The prognosis of the person with a health impairment is equally important to the practicing physician and the life insurance company. Medical statistical material exists on vast numbers of insured people; a significant part of this is supplied by clinicians. This investigation was made on material from the files of life insurance policyholders who were required to pay increased premium rates because at least one blood pressure reading was above 136 mm. Hg systolic or 88 mm. Hg diastolic. All persons with any other condition that would also require an additional premium were excluded. Among these conditions, were obesity or other metabolic disorders; demonstrable cardiovascular changes; disease of the renal, digestive, and nervous systems, or a history of these diseases. The extreme upper levels of blood pressure were near the ranges of 180 mm. Hg systolic and 110 mm. Hg diastolic, these being the highest ranges in persons on whom insurance was issued. All subjects

were men because the number of women that could have been included was too small to be significant.

In evaluating the factor of lability, the records from which the material was taken were restricted to those in which all blood pressure observations were made within a period of 6 months. The highest and lowest systolic and the highest and lowest diastolic pressures were accepted as the range of blood pressure (lability) for that person. Any bizarre variation in multiple readings would obviously introduce some distortion when the material was analyzed. This was avoided by further selecting for study only records in which the average systolic variation was within 5 mm. Hg of that average systolic pressure used for classification of the life insurance risk. The same limit of variability was also applied to the diastolic variations.

The data were separated into groups for comparison of the long-range effect or mortality experience according to ranges of lability. The moderately increased mortality for each group was computed and the results listed in a Table. In those persons with elevated systolic pressure, there was no important variation between the mortality ratio of 237% for the division with labile characteristics and 211% for the division with stable blood pressure. It is apparent that in those with elevated diastolic blood pressure there was no significant difference in the mortality between the groups, 210% for the labile and 185% for the nonlabile.

Life expectancy was determined by the usual method of comparison with the most recent commonly used standard which is the "Intercompany 1946-49 Select Mortality Table." For convenience, the material was classified into age groups of 30 to 49 years (average of 40 being used) and 50 years and over (average of 55 being used). A quarter of the total number of cases, those entering the study under age 30, did not furnish a sufficient number of deaths for valid statistical analysis.

In the 40-year age group, there was significant reduction in the life-expectancy by nearly 7 years when the diastolic pressure was 90 mm. Hg or higher, as compared to the lower levels. It is interesting to observe that this was not evident among persons in the older group. In both age groups systolic blood pressure elevation was associated with a gradual slight decrease in life-expectancy roughly in proportion to the pressure increase.

There were 120 deaths among the 2510 policy-lives, representing a death rate of nearly 5% occurring between 1942 and 1954. It should be emphasized that none of the persons on whom data were obtained had severe degrees of arterial hypertension, these being rigidly excluded by the process of life insurance risk selection. It is interesting to note the age distribution of those who died, 55% being in the 30 to 49-year group. This was compared to the distribution of deaths among policyholders of similar age groups who were issued insurance at standard premium rates, and the proportions were found to be the same in the two types of policyholders. No explanation is known for this coincidence.

Among a highly selected group of persons with mild or moderate arterial hypertension, but otherwise in good health, there is no evidence that lability of the blood pressure was a significant factor in the moderately increased mortality experienced. Thus, the observed fluctuations in blood pressure did not indicate that the life span in these persons would be greater than that of persons with constantly observed hypertension. Therefore, it would seem proper to include a proportionate number of elevated readings with normal ones in the determination of the average blood pressure for an individual person. These data also support the generally accepted conclusion that the significance of hypertension becomes less important as the age of the persons advances.

The results of this study suggest the desirability for early recognition of temporary elevations in blood pressure and their importance to otherwise healthy persons. (Pollack, A. A., Gudger, J. R., Benign Hypertension: A.M.A. Arch. Int. Med., 103: 98-101, May 1959)

* * * * *

Adrenocortical Steroid Therapy

The high percentage of remissions in the childhood form of the nephrotic syndrome, treated with massive pharmacologic dosages of ACTH or adrenocortical steroids obtained in this clinic and elsewhere, has raised the hope that the proteinuria of some forms of renal disease in older children and adults might also be beneficially influenced. Complete and, to date, persistent disappearance of proteinuria with entirely normal urinary findings has been noted during such therapy in about 15% of the older children and adults in an unselected population of proteinurics under the authors' care.

Fifty-four patients, 36 males and 18 females, ranging in age from 11 to 69 years, received ACTH or adrenocortical steroids for one to 30 months or longer in pharmacologic dosages as indicated in Tables.

In 30 patients, the probably nature of the renal lesion was established by a percutaneous needle biopsy of the kidney. In 4, the diagnosis was based on necropsy findings. This group of 34 patients consisted of 11 with membranous glomerulonephritis, 5 with subacute glomerulonephritis, 9 with chronic glomerulonephritis, 3 with pyelonephritis, 2 with intercapillary glomerulosclerosis, and one each with lobular nephritis, arteriolar nephrosclerosis, sarcoidosis, and possible disseminated lupus erythematosus.

In the remaining 20, only clinical impressions are available. Initial therapy usually consisted of 200 units of depot ACTH, although amounts ranged from 50 to 500 units given daily in divided dosage for 28 days or longer while on a diet rigidly restricted in sodium but providing 150 to 200 mEq.

As indicated in Tables, in many patients, subsequent treatment with ACTH, cortisone, hydrocortisone, prednisone, or triamcinolone on an intermittent or continuous basis was undertaken in the hope of inducing a remission in those who had not responded or of preventing a recurrence in the others.

Prior to, during, or at intervals after therapy, venous blood was analyzed for sugar and nonprotein nitrogen levels and venous serum for CO₂ content and the concentrations of chloride, sodium, potassium, calcium, phosphorus, and cholesterol by methods in regular use in this laboratory. Routine urinalyses were obtained. Proteinuria was quantitated by the heat-acetic acid method and less often by macro Kjeldahl determinations with correction for the nonprotein nitrogen. The clearance of endogenous creatinine was also measured at intervals. Because of the sheer bulk of these data, only selected portions germane to the aspects discussed in this article are presented.

Patients receiving maintenance steroid of ACTH were examined for tuberculosis by roentgenograms of the chest and by serial patch tests; morning body weights and temperatures at 4:00 p.m. were obtained daily and a postprandial urine was examined each day with TesTape for glucose; these findings together with any symptoms, signs, alterations in body hair, menses, and the like were recorded by the patient and reviewed by the physician at each 2 or 4-week visit.

Of the 54 proteinurics treated with ACTH and adrenocortical steroids, 4 were lost to follow-up, 15 died, and 9 have apparently cleared completely. In the remainder, the proteinuria has persisted in varying degrees, and impending or manifest renal failure as indicated by marked reduction of creatinine clearance with or without azotemia has developed in one-half or more.

Of the 9 patients whose proteinuria apparently cleared completely and in whom there is at present no clinical nor laboratory evidence of renal or vascular disease, 6 were known or believed to have membranous glomerulonephritis or a nephrotic syndrome as a manifestation of glomerulonephritis. These represented about 33% of the patients with either of these two diagnoses. It is noteworthy that not one of the 7 patients known by renal biopsy to have subacute glomerulonephritis or lobular nephritis, none of the 20 others believed to have chronic glomerulonephritis on clinical or histologic grounds, and neither of the 3 with diabetes mellitus and proteinuria responded with a complete remission.

Age appears to influence the probability of a remission. Thus, in the group of 19 patients with a definite diagnosis of membranous glomerulonephritis or a probable diagnosis of nephrotic syndrome on the basis of glomerulonephritis, the mean age of the 6 who went into remission was 26 years and 2 months in contrast to 33 years and 9 months in those with persistent proteinuria.

The likelihood of a remission can also be gauged in part from the clinical and laboratory responses during or following therapy. Thus, persistence of edema, continued hypoalbuminemia, failure of hypercholesterolemia to clear, and elevated nonprotein nitrogen, a diminished creatinine clearance, and the persistence or appearance of hypertension argue against an eventual remission. On the other hand, the absence of any or all of these changes does not guarantee ultimate disappearance of the proteinuria.

In patients with membranous glomerulonephritis, preferably defined by biopsy, the results of therapy probably yield a higher rate of remissions than can be expected to occur spontaneously and are sufficiently encouraging to warrant the expense and the potential hazard of therapy. Also, it seems worthwhile to treat patients with miscellaneous entities, such as disseminated lupus erythematosus, sarcoidosis, and pyelonephritis in view of the remissions observed. Such a recommendation cannot be made in chronic or subacute glomerulonephritis nor in those with diabetic nephropathy.

In view of the occurrence of episodes classifiable as major complications of therapy during the initial intensive 4-week treatment and the paucity of such events during maintenance, it would appear desirable to limit treatment to intermittent dosages of ACTH and steroids and to eliminate the initial course of continuous ACTH or steroid administration. There is no evidence at present that this will necessarily decrease the number of remissions. (Danowski, T.S., Mateer, F.M., Puntereri, A.J., ACTH or Adrenocortical Steroid Therapy of Proteinuria in Adolescents and in Adults: *Am. J. M. Sc.*, 237: 37-49, May 1959)

* * * * *

Emotional Disorders of Pregnancy

Social scientists have presented in the recent sociological and psychiatric literature many studies relating social and environmental factors and emotional disorders. Reports have indicated that social factors may have importance in the emotional disorders of pregnancy and childbearing. These have led to a consideration of the possibility of predicting maternity patients' emotional reactions from social history to help the physician better to recognize potentially ill patients. Moreover, if social factors were related to the onset of the disorder, efforts at alleviating them might assist patients in recovering once the illness had developed. If this were possible, practitioners might more effectively treat this group of illnesses.

In this article, data are presented on two aspects of the problem of social factors in pregnancy: (1) a study in predicting a group of women's emotional reactions to pregnancy on the basis of social history data, and (2) experiences with a modified psychiatric approach in which particular emphasis is placed on trying to improve the patient's adjustment to the role of motherhood.

In most of the cases presented, the same social therapeutic principles apparently apply. These and many other psychiatric maternity patients seem to benefit from:

1. Help from women experienced in the care of infants, assistance when they are physically weak and confused, and guidance so they themselves may learn the responsibilities and pleasures of maternity. This means they need good relations with loving women friends and relatives, or substitutes for them.
2. Understanding, emotional support, and practical assistance from a loving husband, who himself will do well to recognize, learn about, and respect the job women do in the home. Moreover, where there is a problem, efforts should be made to assist a good sexual adjustment. Oftentimes, husbands whose work has meant being away from home for long periods, night-time work or study and the like, should consider organizing a program which is less strenuous for themselves and their families.
3. Leisure time - outside activities, social life with husband and friends, both to continue their pleasure in living while they learn to enjoy the maternal role and also to provide a much needed break in the routine of "mother's never-ending day." Wives need not give up interests and satisfactions from their previous life, but merely reorganize their schedules with the help of assistants. Everyone needs interesting new stimuli and self-expression gained by changing activities with definite rewards and pleasures.
4. Competent medical attention from a trusted physician for themselves and their babies, regular examinations, as well as support in emergencies. Confidence in the doctor leads to relief of anxiety during and after pregnancy, about physical illness, and about the baby's welfare.
5. Recognition of their limitations and restriction of other responsibilities, such as sharing the care of aged relatives or avoiding when possible the assumption of special burdens, such as moving late in pregnancy or soon after delivery.
6. Discussion of their plans, fears, hopes, and problems with their husbands, relatives, doctors, and friends. This provides information and leads to planning and foresight. When they are prepared in advance to meet emergencies, they are not so easily overwhelmed and driven into a psychiatrist's office. Discussion with the husband is most profitable if it works both ways. He should share his thoughts with his wife for the same reasons. Not only does this help him, but it also gives her a greater feeling of being identified with his career and being loved and appreciated.

The task of the physician seems to be to help the patient recognize these needs and do something about them as well as to understand something of her underlying personality dynamics. Every one encounters vicissitudes in the course of everyday living, but persons who are more

susceptible by reason of constitution or early experiences react with greater emotional disturbance. These studies indicate that several types of strains are particularly burdensome to the marginally adjusted woman during the period of childbearing. Recognition of these strains in advance may lead to possible prediction of later emotional difficulties and even possible prognostication of the severity of the disorder. When the environmental situation is not intolerable, in many cases thoughtful planning and management of these social factors may contribute to eventual alleviation with consequent psychiatric improvement after relatively few interviews.

Social factors alone are probably not producing these disorders. Undoubtedly, there are physiological factors as well as personality variables. Women of certain personality types seem regularly to use poor judgment and get into difficult social situations. Thus, a spiraling process is possible. Unstable women may involve themselves with social strains and thus perpetuate their personality difficulties. If they push themselves too far and too fast an emotional disorder is precipitated, often at the period of childbearing.

Social strains amenable to improvement apparently play a larger part in the development of many emotional illnesses of maternity patients than in the disorders of other comparable young married women. These illnesses seem to respond better to improvements in the environment. This is not surprising. An emotional disorder which develops as a result of an acute social event, such as pregnancy and childbearing in a woman's life, should reasonably be expected to respond to social readjustments more readily than a disorder which has developed in the nonchildbearing period and which is related to more chronic personal and emotional problems. Because psychotherapy which emphasizes these social factors apparently is more successful with many psychiatric maternity patients, it may be concluded that social problems have some causal relationship in many of these cases.

Obstetricians and general practitioners may have considerable success in the management of the emotional aspect of many maternity patients both before and after the development of psychiatric symptoms. Because, in most cases, it seems that social factors have considerable importance, efforts at pointing out the pleasures and satisfactions and at diminishing the social stress and strains may effect considerable benefit and may help prevent more serious emotional difficulties. (Gordon, R. E., Gordon, K. K., Social Factors in the Prediction and Treatment of Emotional Disorders of Pregnancy: *Am. J. Obst. & Gynec.*, 77: 1074-1081, May 1959)

* * * * *

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, 19 June 1958.

* * * * *

Trachoma in Northern Australia

During the last 4 years, various investigations into the health of the Australian aboriginal in remote parts of the continent have been undertaken by both the Public Health Departments of Western Australia and Queensland and by the Commonwealth Department of Health. The ophthalmic investigators have shown that the greatest single eye disease among them is trachoma. The high incidence of this disease in the remoter areas was a surprise because the blindness rate was not high and the usual complications of trachoma were rare. The type of trachoma found was that known as "trachome pur" in which there are few or no symptoms, no discharge, and no obvious signs of disease unless one everts the upper lid and finds the typical necrotic follicles and fine conjunctival scars.

The difference in severity of trachoma in various areas of the world has usually been considered as conditioned by the presence and nature of secondary bacterial infection. The bacteriology of secondarily infected trachoma has been extensively studied in Egypt, Tunisia, and North Africa generally; this study has revealed a host of invaders, pneumococci, gonococci, streptococci, Koch-Weeks bacilli, staphylococci, and so forth, singly or as mixed infections. All of these investigations were done on patients with an obvious discharge and inflammation.

Large areas of the world, however, exist—mainly in East Asia and Australia—in which the trachoma is not obviously secondarily infected. Nothing is known of the bacteriology of these cases. In addition, the ophthalmic surveys of Western Australia carried out in 1953, 1954, and 1955 suggested that staphylococcal infections (for example, styes and marginal blepharitis) were rare among tribal aboriginals and only began to occur where there was assimilation of the white and native races in a common way of life. In these areas (for example, the Kimberley District of Western Australia) the trachoma was also clinically more severe and resembled that seen in Egypt.

Therefore, it seemed advisable to investigate the bacteriology of the conjunctival and nasal mucosa in areas where there was little or no contact with persons of European descent and where there were few or no clinical signs of infection. In the area chosen, it is remarkable that, although the eyes appear clean, there is often in children a severe mucopurulent nasal discharge. This does not appear to inconvenience the children and may be merely due to lack of nasal hygiene. The whole question of the distribution of pathogenic bacteria in these hot, dry, sparsely populated areas is an interesting one which has barely been touched. This is of importance in consolidating knowledge of "trachome pur" because it will help decide whether the difference between this relatively innocuous disease and the serious "text-book trachoma" is merely one of presence or absence of secondary infection.

The salient clinical features of trachoma, as observed in 52 Northern Territory aborigines on whom bacteriologic investigations were performed,

are shown in a Table. The disease was in the early active stage in 42 patients. Apart from slight ptosis of the upper eyelids in some cases, there was no external sign of infection and patients were free of symptoms. The tarsal conjunctiva was thickened, reddened, and granular. Typically, the tarsal conjunctiva showed engorgement of the subepithelial capillaries with consequent papillary hypertrophy and, in addition, aggregations of inflammatory cells in follicular formation. These follicles showed central necrosis. Later, the necrotic tissue became replaced by fibroblasts giving rise to fine scar tissue. Epithelial infiltrates of the upper part of the cornea were present with fine vessels extending usually not more than three mm. from the limbus. In only two cases was this pannus significant enough to produce slight blurring of vision, that is, if extended to the pupil area. The authors used the clinical classification endorsed by the Expert Committee on Trachoma of the World Health Organization, namely:

Stage A. Active and infectious. Papillary hypertrophy follicles and epithelial corneal infiltrates.

Stage B. Healed by scarring without impairment of sight. No follicles.

Stage A-B. Both follicles and scars present.

Stage C. Healed with scarring of the cornea sufficient to impair sight.

Stage D. Certifiably blind from trachoma (for example, corneal scars, trichiasis, shrinkage of the conjunctiva, and so forth).

Forty-two patients were found in Stage A, twenty in A-B with both follicles and scars, three healed completely with fine lid scars only (Stage B), and one corneal scarring sufficient to impair sight (Stage C). No patient was blind from trachoma or its complications.

Stage A was considered the most likely to be infectious and these cases were chosen for attempted culture. The clinical features of trachoma in the Northern Territory correspond closely to those found in heavily infected areas of the Middle East where these latter cases are uncomplicated by infection with pathogenic bacteria. However, the course of the disease is more benign in Australia than in the Middle East and, in this series, complete healing with minimal scar tissue formation, no entropion, and virtually no corneal involvement was the rule.

During June 1957, bacteriologic and virologic investigations were undertaken on Australian aborigines affected with trachoma who lived at Groote Eylandt, Oenpelli, and Goulburn Island in the Northern Territory. The disease was almost entirely in the form of "trachome pur" with practically no cicatrization or pannus and a very low blindness rate.

Hemolytic staphylococci were found in the eyes of three patients out of 66 examined, but they were not present in the noses. B hemolytic streptococci were found only in the noses of three patients, but not in their eyes. In one patient, Friedlander's bacillus was found in the eyes and nose; in another, it was present only in the eye. This low incidence of bacterial pathogens is remarkable.

Attempts to isolate a virus from 38 patients using established cultures of human amnion and Hela cells and from explants of conjunctiva from patients were unsuccessful. No viruslike inclusions were seen in stained smears of tarsal conjunctiva from fifty-one patients. (Crotty, J. M., Mann, I., McLean, D. M., Trachoma in Northern Australia - Bacteriologic and Virologic Aspects: Am. J. Ophth., 47: 503-508, April 1959)

* * * * *

Medical Aspects of Missile Operations

The following classes in Medical Aspects of Missile Operations will be conducted at the 6550th U. S. Air Force Hospital, Patrick Air Force Base, Fla., during Fiscal Year 1960:

| | |
|--------------|----------------------|
| Class 5..... | 14-24 September 1959 |
| Class 6..... | 9-19 November 1959 |
| Class 7..... | 11-21 January 1960 |
| Class 8..... | 14-24 March 1960 |
| Class 9..... | 9-19 May 1960 |

The Navy has been allotted a quota of 3 spaces for each course. Applications are encouraged from either Medical Corps or Medical Service Corps officers. SECRET security clearance is required on all candidates approved for attendance.

Officers desiring to attend this course should submit a written request to the Bureau of Medicine and Surgery via their Commanding Officer. Requests must be received in the Bureau by the following dates for each course as indicated:

| | |
|--------------|-------------------|
| Class 5..... | 3 August 1959 |
| Class 6..... | 28 September 1959 |
| Class 7..... | 30 November 1959 |
| Class 8..... | 1 February 1960 |
| Class 9..... | 28 March 1960 |

All requests must indicate that a Security clearance of SECRET has been granted to the officer requesting attendance.

Successful candidates will be issued Temporary Additional Duty travel and per diem orders from this Bureau's training funds. (ProfDiv, BuMed)

* * * * *

Training in ABC Warfare for Medical Officers -
A Four Weeks' Course

ABC Warfare Defense Course for Medical Officers - A Four Weeks' Course

Course #5 convening 4 January 1960

Location: U.S. Naval Schools Command, Naval Station, Treasure Island, San Francisco, Calif.

Student Clearance Required: SECRET

Reporting Time and Place: Prior to 2200, 3 January 1960, Personnel Office, U.S. Naval Schools Command, Bldg. 28

Course Objectives

The course is designed for experienced active duty Naval Medical officers possessing SECRET security clearance. It will stress the medical aspects of modern warfare and of military peace time operations, including problems incident to atomic, biological, and chemical weapons systems, nuclear propulsion, mass casualties, and isotope programs. Military aspects of the weapons systems and military countermeasures will also be considered so that Medical officers may function effectively on a staff and can reasonably assess the medical compromises imposed by the military situation. Outstanding speakers, both military and civilian, will be on the program. The course will include visits to the Naval Radiological Defense Laboratory and the Naval Biological Laboratory; it will also include several practical exercises and drills. Texts will be provided for permanent retention by the students.

Class quota: 50 (10 spaces reserved for Army and Air Force)

Quota Breakdown: 40 Navy; 30 Medical Corps, 5 Dental Corps,
5 Medical Service Corps

Nominating Bureau: Bureau of Medicine and Surgery

Eligibility

1. Medical Officers. Requests for attendance are invited from Medical officers of the Regular Navy, excluding residents. Requests from Reserve Medical officers with a minimum of 20 months of obligated service remaining may be submitted for consideration, whose attendance would obviously assist them in the performance of their assigned duties.

2. Dental Officers. Officers to attend will be selected by the Bureau of Medicine and Surgery.

3. Medical Service Corps Officers. Requests for attendance are invited from Senior Medical Service Corps officers. Preference will be given requests from officers assigned duties on Fleet and/or District Staffs, and Administrative officers of Naval Hospitals.

Interested officers meeting the above eligibility must submit a letter request via their Commanding Officers to reach the Bureau of Medicine and Surgery (Attn: Code 316) prior to 31 October 1959. Appropriate TAD orders will be requested by the Bureau for all selected candidates. Travel and per diem expense will be provided from Bureau training funds.

Only one course in ABC Warfare Defense will be scheduled for Fiscal Year 1960. (ProfDiv, BuMed)

* * * * *

Direct Appointments - U. S. Naval Reserve
Medical Service Corps

The Chief of Naval Personnel has approved the recommendation of the Chief, Bureau of Medicine and Surgery permitting direct appointments in the U. S. Naval Reserve, Medical Service Corps, in the cases of applicants possessing advanced degrees (Ph.D., M.A., or equivalent). Previously, such individuals were given Officer Candidate status and sent to Officer Candidate School for a 4-month course of indoctrination. They were commissioned at the end of that course, provided it was successfully completed.

Under the new procedure, such individuals will be commissioned simultaneously with reporting for active duty and will undergo a period of one month's indoctrination at the Naval School of Hospital Administration. This course will include familiarization with the organization and functioning of the Navy, indoctrination in customs, honors, ceremonies, and regulations and instruction in the principles of effective Naval leadership. (MSCDiv, BuMed)

* * * * *

From the Note Book

1. Rear Admiral B. W. Hogan, the Surgeon General of the Navy, has accepted appointment as North American Chairman of the Pan American Medical Association's Section on Military Medicine. Admiral Hogan was nominated for the appointment by the Association's President, Dr. Julio F. Schutte, and Board of Trustees on April 27, 1959. (TIO, BuMed)

2. CAPT J. A. English DC USN, Head, Medicine and Dentistry Branch, Department of the Navy, Office of Naval Research, presented "The Dental Research Program - Review and Projection" at the fifteenth meeting of the Committee on Naval Medical Research of the Academy of Sciences, National Research Council on 5 June 1959. (TIO, BuMed)

3. LT R. E. George DC USN, U. S. Naval Air Station, Brunswick, Maine, presented a clinic on "Cricothyroidotomy" at the annual convention of the Maine State Dental Society, 19 June 1959, at Rockland, Maine. In addition to a lecture and film, a facsimile neck was provided for audience participation. (TIO, BuMed)
4. The Director of the Armed Forces Institute of Pathology has announced that Doctor Robert E. Stowell has been appointed Scientific Director of the Institute. He succeeds Doctor E. W. Goodpasture who resigned on 10 April 1959. (AFIP)
5. The National Bureau of Standards has added a new series of 10^{-9} - and 10^{-11} -g radium standards to the list of radioactive samples it prepares and distributes. This new series was made up to restock the nearly depleted and less accurate 1940 supply of radium standards in this range. To provide standards with activities between the 10^{-9} -g and 10^{-11} -g values, new "blank solutions," containing 0.02×10^{-12} g of radium, have also been made available for dilution purposes. (NBS)
6. Of 120 electrocardiograms of healthy adult subjects, native or long-term residents of Morococha, Peru (14,900 feet above sea level) 19.2% presented definite characteristic signs of right ventricular hypertrophy; 32.5% showed highly suggestive signs of right ventricular hypertrophy; 30.8% were classified as right bundle branch block; and 17.5% were within normal limits. (Circulation, May 1959; A. Rotta, M.D., A. López, M.D.)
7. Nocardiosis is a granulomatous and suppurative infectious disease which is caused by the aerobic actinomycete *Nocardia asteroides*. Manifestations may be acute, chronic, localized, or generalized. Diagnosis is dependent upon laboratory identification of the fungus upon its recovery from involved tissues. (A.M.A. Arch, Int. Med., May 1959; M. C. Larsen, M.D., H. D. Diamond, M.D., H. S. Collins, M.D.)
8. The purpose of this study was to determine the basic pathology of tuberculous salpingitis and the response of this disease to chemotherapy. The clinical and pathological results in a group of patients who received multiple therapy for varying periods of time, up to 3 years, followed by removal of the Fallopian tubes are discussed. (Am. J. Obst. & Gynec., May 1959; G. Schaefer, M.D.)
9. This review of 200 patients with abdominal trauma stresses the most important diagnostic and prognostic factors. Non-penetrating injuries presented the greatest diagnostic challenge. Repeated careful evaluation of the abdomen in patients with multiple injuries is of the greatest diagnostic importance. (Am. J. Surg., May 1959; R. D. Williams, M.D., R. M. Zollinger, M.D.)

10. Seventy-five patients having cirrhosis of the liver who bled from the gastrointestinal tract before operation and who had splenectomy with or without omentopexy, and 54 similar patients who had splenorenal or portocaval shunts were compared with respect to survival rates and the incidence of gastrointestinal bleeding after the operation. (A. M. A., Arch Surg., May 1959; G. F. Hallenbeck, M. D., et al.)

11. Hydrochlorothiazide, a derivative of chlorothiazide, was tested for its diuretic effectiveness in patients with congestive heart failure, cirrhosis, chronic renal disease, and hypertension. It was found to be a potent oral diuretic, particularly in patients with congestive heart failure. It was of limited value in patients with cirrhosis and renal disease. (Am. J. Med. Sci., May 1959; M. A. Sackner, M. D., A. A. Wallack, M. D., S. Bellet, M. D.)

12. This report evaluates the manner in which 157 cases of melanoma of the iris have been handled with the idea of establishing an approach to their future management. (Am. J. Ophth, Part II, May 1959; A. B. Reese, M. D., G. W. Cleasby, M. D.)

* * * * *

Gift Books for the Edward R. Stitt Library -
Naval Medical School

The value of the Edward R. Stitt Library in these times of budgetary limitations could be increased by soliciting gift volumes from officers who review books recently published. Many of these books, having been reviewed, are probably of no further use to the reviewer because few personal libraries are adequate for reference work and a larger library must be utilized when a problem arises. Thus, a constructive purpose can be served if review, or other complimentary copies of books are donated to the Naval Medical School Library. Here they will be available to everyone when the need arises.

Credit will be given for each donation, first by inserting a small plaque inside the cover with the officer's name and the date on it and, second, by announcing the donation by name on the monthly acquisition list.

Current and future students in the Washington area will appreciate such generosity and the value of our Library will, at the same time, be materially increased. (CAPT L. J. Pope MC USN, Commanding Officer, NavMedSchl)

* * * * *

Recent Research Reports

Naval Dental Research Facility, NTC, Bainbridge, Md.

1. Agglutination and Inhibition of Lactobacilli by Parotid Saliva and Blood Serum. NM 75 01 26.06, 10 May 1959.

Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Some Considerations Bearing on the Mechanism of Action of Proteolytic Enzymes and Transferases. NM 01 01 00.02.07, 22 August 1958.
2. Summaries of Research, 1 July - 31 December 1958.
3. Immunoreactions Involving Platelets:
 - I. A Steric and Kinetic Model for Formation of a Complex from a Human Antibody, Quinidine as a Haptene, and Platelets; and for Fixation of Complement by the Complex.
 - II. Theoretical Analysis of the Model
 - III. Quantitative Aspects of Platelet Agglutination, Inhibition of Clot Retraction, and Other Reactions Caused by the Antibody of Quinidine Purpura.
 - IV. Studies on the Pathogenesis of Thrombocytopenia in Drug Purpura Using Test Doses of Quinidine in Sensitized Individuals; Their Implications in Idiopathic Thrombocytopenic Purpura. NM 02 01 00.01.08, 13 January 1959.
4. Labile Titratable Fatty Acids of Rat Diaphragm Muscle and Their Possible Role as the Major Endogenous Substrate for Maintenance of Respiration. NM 72 02 00.02.02, 22 January 1959.
5. Determination of the Weight Average Mobility for an Associating Protein System. NM 02 01 00.01.09, 11 February 1959.
6. Nitrogen Partition in the Excreta of Three Species of Adult Mosquitoes. NM 52 07 00.01.03, 20 February 1959.
7. Serologic Reactions in Schistosoma Mansoni Infections. V. Localization of CHR and Cercarial Agglutinating Factors in Electrochromatographically Fractionated Human Sera. NM 52 02 00.01.03, 20 February 1959.
8. Molybdenum Toxicosis in the Rat. NM 75 01 00.02.02, 20 February 1959.
9. Adrenocortical, Splenic, and Reproductive Responses of Mice to Inanition and to Grouping. NM 24 01 00.04.05, 13 March 1959.
10. Analog Study of a Single Neuron in a Volume Conductor. NM 01 05 00.01.01. 15 June 1958.

Naval Medical Research Unit No. 3, Cairo, Egypt

1. Biological Observations on Certain Turkish Haemaphysalis Ticks (Ixodoidea, Ixodidae) NM 52 08 03.3.09, August 1958.
2. The Interdependence of Epidemiologic and Taxonomic Research as illustrated by the Genus Hyalomma (Ixodoidea, Oxodidae). NM 52 08 03.3.10, September 1958.
3. Blood Ammonia Levels in Patients with Advanced Hepatic Fibrosis Associated with Schistosomiasis. NM 72 01 03.14.1, December 1958.
4. Studies on Suckling Lice (Anoplura) of African Mammals. II. New Species of the Genera Linognathus, Haematopinus, and Ratemia. NM 52 08 03.8.02, December 1958.
5. A Neotype for Haemaphysalis Leachii Leachii (Audouin, 1827) (Ixodoidea, Ixodidae). NM 52 08 03.3.06, December 1958.

Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Intracutaneous and Subcutaneous Asian Influenza Virus Vaccination Studies. NM 52 05 04.5.1, 26 January 1959.

Naval Air Development Center, Johnsville, Pa.

1. Problems in Human Vibration Engineering. Report No. 2, NM 18 01 12.4, 6 March 1959.

Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Diodrast (I¹³¹) Blood Clearance as an Index of Renal Blood Flow. NM 71 06 09.1.7, March 1959.

Naval School of Aviation Medicine, NAS, Pensacola, Fla.

1. Estimating the Reliability of Mutual Peer Nominations. Subtask No. 1. Report No. 19, NM 16 01 11, 14 October 1958.
2. A Note Comparing the Interview and Written Questionnaire Techniques for Identifying Anxiety Toward Flying. Subtask No. 1, Report No. 20, NM 16 01 11, 1 December 1958.
3. A Table for Converting Voltage to Sound Pressure Level in Decibels (0 db = 0.0002 volt = 0.0002 dyne/cm²). Subtask No. 2, Report No. 1, NM 18 02 11, 1 December 1958.
4. A Note on the Gravity-Free State on a Space Platform. Subtask No. 1, Report No. 48, NM 17 01 11, 29 January 1959.

Naval Medical Research Unit No. 2, Taipei, Taiwan

1. Asian Influenza in Taiwan, 1958. NM 52 05 02.4.4, 17 February 1959.
2. Water and Electrolyte Balance Studies in Cholera. NM 52 11 02.3.2, 10 March 1959.

* * * * *

BUMED INSTRUCTION 6200.9A

22 May 1959

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: U. S. Navy Disease Vector Control Centers

Ref: (a) BuMedInst 6200.1, Subj: Joint utilization of certain Armed Forces medical laboratory facilities

This instruction sets forth the mission, functions, and procedures for utilizing services of:

a. U. S. Navy Disease Vector Control Center, U. S. Naval Air Station, Jacksonville, Fla; and

b. U. S. Navy Disease Vector Control Center, U. S. Naval Air Station, Alameda, Calif.

BuMed Instruction 6200.9 is canceled.

* * * * *

BUMED NOTICE 1550

2 June 1959

From: Chief, Bureau of Medicine and Surgery
To: Commandants, Continental Naval Districts
Naval Reserve Medical Specialist Units

Subj: Naval Reserve Medical Specialist Units' Curriculum Entitled "War Emergency Surgery" for fiscal years 1960 and 1961

Ref: (a) BuPersInst 1550.17, Subj: Preparation of curricula for programs of the Naval Reserve (NOTAL)

Encl: (1) Subject curriculum complete with reference material

This notice promulgates the "package curriculum" to be used by Reserve Medical Specialist units during fiscal years 1960 and 1961.

* * * * *

BUMED INSTRUCTION 7540.1

3 June 1959

From: Chief, Bureau of Medicine and Surgery
To: All BuMed Management Control Activities

Subj: Processing of Navy internal audit reports

Ref: (a) NavComptInst 7540.2, same subject

This instruction establishes revised procedures for processing Navy internal audit reports. BuMed letter BuMed-231 of 3 April 1956 (NOTAL) regarding internal audits at Naval Hospitals is canceled.

DENTAL**SECTION**

Financial Aid Requested for Philippine
Dental Association

The Philippine Dental Association has launched a program to build a permanent headquarters building in Manila. The construction costs will be approximately \$150,000. President Dominador G. Santos has appealed through the American Dental Association Council on International Relations to American dentists for assistance in raising funds for this building.

President Santos has also sent a personal letter to Rear Admiral C. W. Schantz DC USN, Assistant Chief for Dentistry and Chief of the Dental Division, Dental Corps. Because many Navy Dental officers have served in the Philippines and are acquainted with members of the Philippine Dental Association, the Navy Dental Corps has a personal interest in the success of this project.

As suggested by President Santos, small contributions of one dollar will be greatly appreciated. Those desiring to assist in this project should mail contributions directly to Dr. Dominador G. Santos, P.O. Box 1142, Manila, Philippine Islands.

* * * * *

High Speed Cavity Preparation

In order to obtain base line information with which to compare the effect of high speed cutting, it is necessary to determine the tissue reaction to conventional cutting speeds of 6000 revolutions per minute. Cavities may be cut in the gingival third of the buccal surfaces of premolar teeth of children 12 to 14 years old which are to be removed for orthodontic reasons. No attempt is made to keep the teeth cool with air or water. After the cavities are prepared, the teeth are immediately extracted and placed in a fixing solution. They are decalcified, sectioned, and observed at a later date. Injury is observed to occur to the odontoblastic layer beneath the cavity preparation; odontoblast nuclei are observed in the dentinal tubules. The nuclei lose their round shape and become long and narrow when observed in the tubules.

While it is possible to see only the nuclei in the tubules, it is believed that complete odontoblasts enter the dentinal tubules. The same injury occurs

to the odontoblastic layer when temperate air is played upon the tooth during the time the cavity is prepared. However, no harmful effects are produced when water or water spray is applied to the tooth during cavity preparation.

It is known that the dentinal tubules in children are larger in diameter than those in older age groups. Similar studies made on teeth of people 40 to 60 years old show that the nuclei also enter their dentinal tubules, indicating that the size of the tubules is not the factor responsible for their entrance.

In order to determine whether the cooling effect of the water or water spray is the factor preventing the undesirable change, the teeth may be cooled from 37° to 0° C. and cavities prepared. Here again the same harmful effects are observed; there is also some evidence of hemorrhage in the dental pulp. This shows that a coolant alone will not prevent the disturbance. Perhaps the water or water spray acts as a coolant and lubricant and the combination is required to prevent the nuclei from being pulled up into the dentinal tubules.

Other experiments have been done with an air turbine dental drill which operates at a speed of 50,000 rpm. The same injury is observed when no precautions are taken and when temperate or cold air is used. When a water spray is used, a cavity cut and extended to within 1.1 mm. from the pulp produces no changes.

The final series of experiments has been done with an air turbine dental drill operating at 200,000 rpm. This instrument has a water spray attached; however, it does not provide sufficient spray to prevent the undesirable changes. When the water spray of the handpiece is supplemented by a spray bottle operated by a dental assistant, no changes are observed.

In summary, it may be said that the exact cause for the odontoblast nuclei entering the dentinal tubules is not known, and how the water or water spray prevents the phenomenon cannot be explained. The odontoblasts migrating into the tubules remain there and deteriorate. The high speeds replace pressure in cutting teeth and are less painful, but not painless. The 200,000 rpm instrument tested did not have sufficient water spray to prevent harmful effects.

Furthermore, it would not accomplish all cutting procedures required in a dental office and conventional belt-driven equipment would be needed. The 50,000 rpm machine is complete and needs no auxiliary cutting equipment. (Dr. Kaare Langeland, 1958 Federation Dentaire Internationale Meeting, abstracted by CAPT William E. Ludwick DC USN, ONR, London)

* * * * *



RESERVE SECTION

Reserve Officers as Commandants' Representatives

Inactive Reserve Medical Corps and Medical Service Corps officers who are members of the faculties and teaching staffs of medical schools and universities are currently serving under appropriate duty orders issued by their respective commandants to accomplish the following objectives:

1. Serve as liaison between their commandant, Office of Naval Officer Procurement and their medical school in all matters of recruiting for the Navy's Medical Department Program.
2. Insure that good public relations and effective publicity for the Navy are being accomplished at the medical school. Toward this end, appropriate pamphlets and brochures are available for distribution to interested individuals.
3. Interview and appropriately advise eligible candidates for the Navy's undergraduate and graduate medical student training programs.
4. Assist their district medical officer as may be necessary in the selection and assignment of Ensign 1915 officers within the Navy's medical student vacation training programs.

Commandants' Representatives are serving at the following medical schools:

| | |
|-----------------------------------------------|-------------------------------------------------|
| Boston University School of Medicine | University of Pittsburgh School of Medicine |
| Harvard University Medical School | Johns Hopkins University School of Medicine |
| Tufts University School of Medicine | University of Maryland School of Medicine |
| University of Vermont College of Medicine | University of Virginia School of Medicine |
| Dartmouth Medical School | Medical College of Virginia School of Medicine |
| University of Buffalo Medical School | George Washington University School of Medicine |
| Rochester University School of Medicine | Howard University School of Medicine |
| Seton Hall College of Medicine | Georgetown University School of Medicine |
| Albert Einstein College of Medicine | University of Louisville School of Medicine |
| Ohio State University College of Medicine | Duke University School of Medicine |
| Hahnemann Medical College | Medical College of South Carolina |
| Jefferson Medical College | |
| Temple University School of Medicine | |
| University of Pennsylvania School of Medicine | |
| Bowman Gray School of Medicine | |

| | |
|------------------------------------------------------|----------------------------------------------------------------|
| West Virginia School of Medicine and Dentistry | Northwestern University Medical School |
| University of North Carolina School of Medicine | University of Illinois College of Medicine |
| University of Tennessee College of Medicine | State University of Iowa College Medicine |
| Medical College of Georgia | Creighton University School of Medicine |
| University of Florida | University of Missouri School of Medicine |
| University of Miami School of Medicine | St. Louis University School of Medicine |
| University of Mississippi School of Medicine | Washington University School of Medicine |
| Louisiana State University School of Medicine | University of Kansas School of Medicine |
| Tulane University of Louisiana School of Medicine | University of Colorado School of Medicine |
| University of Texas Southwestern Medical School | University of Southern California School of Medicine |
| Baylor University College of Medicine | University of California School of Medicine (Los Angeles) |
| University of Arkansas School of Medicine | College of Medical Evangelists |
| University of Oklahoma School of Medicine | University of California School of Medicine (San Francisco) |
| University of Michigan Medical School | Leland Stanford University School of Medicine |
| Wayne State University College of Medicine | University of Oregon Medical School |
| Chicago Medical School | University of Washington School of Medicine |

Commandants' Representatives are serving at the following colleges for the purpose of recruiting psychologists for the Navy's Medical Service Corps:

| | |
|-----------------------------------------|----------------------------------------|
| Catholic University (Washington, D. C.) | St. Louis University |
| University of Maryland | State University of Iowa |
| University of Georgia | Northwestern University |
| University of Alabama | University of California (Los Angeles) |

* * * * *

Seminar for Commandants' Representatives

During the period 3 - 7 August 1959, a seminar will be conducted in each naval district headquarters (Districts 11 and 13 will convene in Com 12) for the purpose of familiarizing these Reserve officers with all aspects of the

Navy's training programs and administrative procedures relating to obtaining a commission in the Medical Corps.

Quotas have been allocated to commandants to provide active duty for training with pay for those eligible officers selected for attendance.

* * * * *

AVIATION MEDICINE DIVISION



Physical Evaluation Procedure

Naval Aviators appearing before the Special Board of Flight Surgeons at the Naval Aviation Medical Center, Pensacola, Fla., for physical evaluation should report on Monday morning rather than later in the week. Usually, five working days are required to complete the examination and the necessary administrative details. When the procedure can be completed in five consecutive days, it is not usually necessary to admit the examinee to the hospital.

* * * * *

Arctic Testing of the U. S. Navy's Mark IV Full Pressure Suit

Immediately following Project "Cold Tiger," the U. S. Navy Mark IV Full Pressure Suit was flown to Thule Air Base to undergo further testing. The following tests were made of the U. S. Navy's Mark IV full pressure suit by the United States Air Force Air Defense Command:

Test Number 1

The first testing of the suit under extreme Arctic conditions as experienced on the Greenland Ice Cap was conducted on 21 December 1958 at the Strategic Air Command Survival Training area, which is approximately 14 miles due east of Thule Air Base.

At Thule Air Base, the temperature was plus 2° F. The temperature on the Ice Cap at the test site was minus 4° F. In addition to the minus 4° F. temperature, an eight knot wind was blowing (from 090°).

The subject for the first test wore the U. S. Navy full pressure suit with the helmet. In addition, he wore the mukluk boots, and the N-4B

mitten set. The mittens were worn over the Mark IV pressure gloves. Upon arrival at the test site, the subject started to build a survival shelter. A fighter trench was dug 8 feet long, 30 inches wide, and approximately 4 feet deep. Depth must be sufficient to provide head clearance when sitting up. The trench was covered with snow blocks 36 inches long, 8 inches wide and 12 inches deep. An "L" shaped ramp-type tunnel was dug perpendicular to the wind and snow blocks were piled along side to cover the tunnel over.

In the Arctic, the subjects of both tests 1 and 2 could not perform very much labor without stopping to rest. The subject wore one set of thermal waffle weave underwear and two sets of cotton (Mark IV) underwear. No cold was noticed when sitting on the snow to rest.

The visors on the Mark IV helmet frosted over because of the labor required in constructing the shelter. The heavy breathing precluded the visors from remaining clear. Normally, the visors were left in the up position during periods of labor and were lowered when resting.

This test was originally scheduled for 24 hours duration, but was terminated after only 4 hours due to the unseasonably warm (minus 4° F.) weather.

Test Number 2

The second testing of the suit was conducted in the same area and under the same conditions, with the exception of the temperatures, as was Test Number 1. The date of the test was 8 January 1959.

At Thule Air Base, the temperature was minus 25° F. The temperature on the Ice Cap at the test site was minus 35° F. In addition to the minus 35° F. temperature, a five-knot wind was blowing (from 110°).

The second test subject wore the U. S. Navy full pressure suit with the helmet, white felt boots, and the N-4B mitten set over the Mark IV pressure gloves. The Mark IV gloves were not the proper size (too tight) and were removed because the subject's hands got cold after only 5 minutes of wear. The pilot removed the gloves with no assistance and redonned the N-4B mittens. With just the mittens on, no discomfort was experienced.

The pilot then built a fighter trench type shelter as described in Test Number 1. This took approximately three hours to complete. The subject wore one pair of waffle weave underwear and one pair of cotton (Mark IV) underwear. When he sat down on the snow to rest, the cold was felt through the garments. Ordinarily this would be no problem as the Firewel Kit would be available to sit on.

The visors on the Mark IV helmet frosted over due to the heavy breathing as a result of the labor involved in constructing the shelter. Normally, the visors were left in the intermediate position while working. When the nose or cheeks were felt to be cold, the pilot closed his visors and sat down to rest. After his breath had warmed his face, the pilot partially raised his visors and went back to work. When the pilot felt too warm from his efforts,

he held the face seal open and let a little cold air into the suit. It was too cold to open the waterproof zipper and the small amount of cold air let in through the face seal was sufficient to regain thermal balance.

Once the shelter was completed, the only survival tasks that remained were to spread out the parachute and to crawl into the sleeping bag in the trench. The subject, having previously completed a full week of survival training on the Ice Cap, was convinced that he could satisfactorily survive in the Mark IV suit. This was concurred in by the Strategic Air Command Survival Training instructors and by the Personal Equipment Officer.

After four hours, rather than crawling into the shelter, the subject stayed out in the open and experimented with various other combinations of clothing. The white felt boots were replaced by the mukluk boots. These were warmer, but they slid down the pilot's legs because of his height. In the shelter, it is difficult to hear a rescue aircraft and with the helmet on it is virtually impossible, hence the helmet was removed. In place of the helmet, the N-2B jacket with hood and a wool stocking cap (pogue) was worn. The N-9B helmet was not worn as it was not considered necessary. The Mark IV suit was compatible with the N-2B jacket and the stocking cap. Very good protection was provided by these garments. The pilot felt that he could adequately survive in either combination, but preferred the N-2B jacket and stocking cap with the Mark IV suit. Needless to say, the hood and stocking cap are lighter than the helmet, but offer no appreciable increase in protection. However, there is an increase in comfort by not having to wear ear phones.

The test was originally scheduled for 24 hours duration, but was terminated after eight hours when it was apparent that no difficulty would be experienced surviving for more than the originally planned 24-hour period.

Conclusions

In both tests, the unrestricted mobility was the best feature noted for the Mark IV suit. No problems other than normal were found in building the shelter, nor in any other phase of Arctic survival. On dry land, the suit is less bulky and provides comparable protection to Arctic clothing. In addition, more mobility is provided by the Mark IV suit in the cockpit plus its known altitude and cold water protection capabilities.

* * * * *

Human Quality Control in Naval Air Training

In industrial production processes, a raw material is selected in accordance with minimum standards of quality and put through a series of processings which change it progressively, in specified ways, until a desired end product is reached. Usually, at several levels of the sequence, the product

is measured to determine the probability that the end product will be within the quality tolerances necessary for its market. This is part of what is known as product quality control.

In training programs, similar quality control requirements exist. This article describes an important instance of the application of psychological research methods to human quality control over a total training program. The training program is that for Naval Aviators. The research organization is the Aviation Psychology Laboratory of the Naval School of Aviation Medicine at Pensacola, Fla.

Human quality control in a training program should start with identification of graduates who have been unsuccessful on the job and work backwards to the determination of those minimum standards which will prevent the selection and/or graduation of potential failures. Therefore, in 1956, the authors visited fleet squadrons and asked squadron commanders to name men who, in their opinion, should not have been graduated from the Naval Air Training Command. Various selection test scores and training grades of unsatisfactory men, and of graduates who had been killed in pilot-error accidents, were compared with those of a fleet satisfactory sample. Analysis showed that grades in pre-solo flight training (a man's first 19 flights) provided one of the most effective minimum standards. Of the lowest 7%, in terms of pre-solo grades, half failed to graduate and half the rest were unsatisfactory or killed in the fleet. It was shown that dropping the lowest 7% immediately would result in an annual saving of approximately \$7,000,000 in training costs and reduction of about 20% in the number of unsatisfactory men reaching the fleet. A study of the accident records of these same men revealed a pilot-error accident frequency that was twice normal, both in training and in the fleet. As a result of these findings, appropriate minimum standards in pre-solo training were put into effect.

In addition to the usual grades, experimental peer ratings of officer potential, made by the man's section mates, were available for many of the men in the fleet surveys. Of 79 men whose peer ratings were in the lowest 7%, only 31 graduated. Thirteen of these had been assigned to squadrons that were visited. Only 2 of the 13 were said to be satisfactory in the fleet. In a later sample, it was found that 71 of the 77 men with peer ratings in the lowest 7% had attrited from training. Based on these findings, it was recommended that a policy be adopted of immediately dropping any man who had a peer rating below 35 if he encountered training or disciplinary trouble of any kind.

Minimum standards already installed should reduce the number of unsatisfactory men reaching the fleet by about 50%. Under the sponsorship of the Chief of Naval Air Training, fleet squadrons will be visited annually to provide criterion data for further studies leading to improved human quality control. (J.R. Berkshire, V.W. Lyon, *The American Psychologist*, March 1959)

Peer Ratings

With the more frequent use of the "Peer Rating" in the Naval Air Training Command, it is necessary that training officers be familiar with the nature of this phenomenon. It is the purpose of this memorandum to offer explanations and descriptions of the concept "peer rating" so that its use in the future may be more adequately evaluated by those concerned.

1. What is a "peer rating"?

A peer rating is an evaluation made on any individual in a group by one or more other individuals in that group. The criterion or characteristic on which the individual is evaluated may be very general in nature or quite specific. A general evaluation might be something like "who is the best man in your group," an example of a specific evaluation is "who is the friendliest man on the team."

2. Purpose of a peer rating

Every individual has many characteristics and psychologists attempt to measure these personal characteristics. Different measuring devices or "tools" are used to measure different characteristics. The peer rating is simply one of these "tools."

For example, if we are interested in an individual's mathematical ability, we would more than likely give him a math test to measure this characteristic; if we are interested in the individual's weight, we would probably have him step on the scales; or, if we are interested in his ability to fly an airplane, we might look at the grades he made in flight training.

Many of an individual's characteristics, however, have their derivation and meaning primarily in terms of the individual's relationships with other individuals. To measure these, we could simply ask the individual himself about his relations with others. But we do know that the individual does not always have the same picture of himself that others have of him. Therefore, we have one of two general ways of measuring these social characteristics. First of all, we could observe the individual in his interaction with others. However, this is not always practical; it is time consuming, and we as observers may not infer the same things from an individual's behavior that others do. Therefore, we simply ask the people who interact with our individual to tell us what they think of him. This, in essence is a peer rating.

3. Misconceptions about peer ratings

Perhaps the most frequent misconception held about the peer rating is that "it is nothing more than a popularity contest." It is quite true that peer ratings can be used to assess popularity. But, a peer rating is not always an index of popularity! Studies on friendship choice and leadership choice have revealed that there is no consistent relationship between being considered a "best friend" and being considered a "leader."

Underlying this misconception is probably the notion that "other people" cannot and will not tell you what they "actually" think about another person.

Given adequate conditions, this is not so. Berkshire, for example, has found that students not only give negative as well as positive ratings about their classmates, but that the negative ratings even tend to be somewhat better predictions of later performance.

We must place some faith in the impressions that people have of one another. In juries, to take an everyday example, we do this. And the "facts" upon which juries make their decisions are not necessarily any more clear than are the "facts" about a person's personality, for example. If they were, there would probably be much less jury deliberation!

Therefore, allowing for biases, impressions, and human error, we can place certain faith in the ability of people to evaluate one another.

4. What is a leadership peer rating?

A leadership peer rating is one type of peer rating. It is an evaluation of an individual's capacity to be a leader. The peer rating is used primarily because leadership implies the existence of a social situation. If someone is going to be a "leader," there must be at least one other individual to follow this man.

We do know that the nature of leadership and the characteristics of leaders vary with the situation in which the group is involved. Also, we have begun to place more faith in the impressions of the group members as to whom they consider to be leader. We all know, for example, that "the bars on the collar do not make an officer." By the same token, "appointed" leaders are not necessarily followed. With peer ratings, we can locate the leader under almost any situation.

In peer rating form, the expression "take me to your leader" may be asked in a number of ways, general or specific. Examples are: "name the men in your group who have the best leadership potential, and those who have the poorest leadership potential," "who would you prefer to have as a squadron skipper," or "who is the leader of your group in general."

5. Leadership peer ratings in the Naval Air Training Command

Peer ratings in the Naval Air Training Command have for the most part been leadership peer ratings given in Pre-Flight training. One major reason for the administration of peer ratings in Pre-Flight is that the groups are much more organized at that level of training. Over the past several years, these leadership peer ratings have been related to a number of variables. A few findings are as follows:

- a. Leaders, selected by peer ratings, tend to be above average in intelligence.
- b. Leaders are not necessarily authoritarian in personality.
- c. Leaders tend to be good followers.
- d. Leadership peer ratings are quite reliable. Classmates tend to agree in their choices and under test - retest conditions peer ratings tend to remain constant.

These results were stimulating and helpful in the development of presently used Pre-Flight peer ratings. However, little research had been done

on peer ratings with respect to how well they predict performance over a long range period. In his 1957 visit, Berkshire obtained "command potential" evaluations from squadron commanding officers for a sample of first-tour aviators who had gone through Pre-Flight some three years earlier. He also had leadership peer ratings on these men from Pre-Flight. The results of his study were that the unsatisfactory officer-aviator in the fleet had significantly lower Pre-Flight peer ratings than did the satisfactory and outstanding officer-aviator. In addition, the classmates of these men who attrited from training also tended to be in the low peer rating group.

The Pre-Flight peer rating has thus become one of our better predictors of success in training and in the fleet.

6. "Why so effective?"

What lies behind the fact that cadets in Pre-Flight can differentiate between those men who some three years later will be satisfactory and unsatisfactory as officer-aviator (if they made it through training at all)? This seems especially remarkable because cadets in Pre-Flight have little knowledge of the requirements of an officer and an aviator.

Two major explanations have been offered most frequently. One is that the cadets in Pre-Flight should know one another well because they "eat, sleep, and breathe" together for four months. This explains the fact that cadets can evaluate one another at that time, but it does not seem to be a sufficient answer to the question of predicting performance three years later.

The other explanation is that in Pre-Flight peer ratings the cadets are asked to name the three high and three low men on leadership potential. This is a general evaluation and, as a result, the nomination or rating is probably based on a number of personal attributes all of which form one general impression. This is a reasonable explanation, but it might be explored more completely.

Because we have a relationship between Pre-Flight ratings and fleet ratings, attention must be given to the conditions under which both are given. Taking Pre-Flight first, we know that for most cadets this is a new situation. It is their first experience with the military system. Not only is it new, as is going away to college, but the values and behavior expected of individuals in the military system are often quite contrary to those we experience in the first eighteen years of civilian life. Tensions and even some self-degrading experiences are frequently experienced by the cadet. In order to stand out in a group as a potential leader, then, the cadet must be able to adjust to these experiences—and fast.

In addition to the pressures presented by the military system, we tend to overlook the fact that there are pressures presented to the cadet by his own group. Each class has its informal organization and a set of norms. It is not even uncommon to find that these class norms at times oppose the norms set up by the military system. Therefore, in addition to adjusting to the new situation and the pressures presented by the military system, the

cadet who is perceived by his classmates as their leader must be one who adjusts to the norms of his group. If he falls short on either end, it is probable that he would not be nominated as the most potential leader. He must understand what is expected of him by the military system and have the fortitude to carry out actions that he considers appropriate. He must also be a compatible member of his group and perhaps even serve as a "tension remover" for many of them.

If a student attrites along the way, it is most often due to either lack of ability or lack of interest. The Pre-Flight peer rating, being general as it is, probably covers both ability and motivation.

To get to the fleet some three years later, we also find that the junior officer-aviator is again in a new situation. He is no longer considered a student even though his learning never ceases. He is expected to perform both as an officer and as an operational aviator. Allowing for squadron variability, it is probably safe to say that the officer duties of a first-tour aviator are at a minimum. At least they are not always as "the book" states. The junior officer, then, must rapidly become familiar with what is actually expected of him by the military system and forget about "what he thought it was going to be like." He must react to both officers and enlisted men as an officer and not as a cadet. Off the deck, he must withstand the pressures of operational flying. As a squadron member, he must again adjust to a social group in which there are individuals of varying enthusiasm and who have various reactions to the pressure of flying. He must also be aware of junior-officer norms and adjust to those as best he can while still acting within the set of expectations held of him by the military system.

On the surface, then, we have what appears to be two completely different situations for the student, Pre-Flight on the one hand and his first tour in a fleet squadron on the other. In terms of specific duties and forms of behavior these two situations are in fact quite different. However, underlying all the differences are some very general common factors. Each situation is uniquely new to the individual entering it. The tensions produced in each situation and the expectations held of the individual are probably different from any he has had before. In each situation, the individual is not given too much time to adjust adequately to these experiences. Those who adjust fast are observed by peers and seniors. Those who never really do adjust are also noticed. It is probably within these two general groups that we have located our high and low peer rates and our outstanding and unsatisfactory officer-aviators.

7. The future

Cross-validation of the peer rating study is, of course, being considered by the School of Aviation Medicine. However, throughout flight training, there are additional opportunities to explore peer ratings on leadership. In Advanced Training, for example, we have what is not a new situation for the cadet, but we do have a situation with multiple pressures prevailing.

By this time, the average cadet is "sick and tired of being a cadet." Yet he must accept the status of his contract and act according to the expectations held of him by the military system. Again, he may also be faced with the sometimes opposing norms of fellow cadets, just as in Pre-Flight. To be recognized as a leader, one would hypothesize that the student must remain to a great extent within the requirements posed on him by the military, but at the same time he must be aware of, and act acceptably within, the standards of his group. This being the case, one would expect that any peer ratings obtained in Advanced Training would correlate well with those received in Pre-Flight and with ratings given him later in the fleet. We might, however, expect some differences in reasons given because the specifics of each situation change. (CNAVANTRA Report, 31 March 1959)

* * * * *

Aerospace Medical Association Meeting

The Aerospace Medical Association (formerly the Aero Medical Association) has concluded its 30th annual meeting at the Statler Hilton Hotel, Los Angeles, Calif. The scientific program opened on 27 April 1959 with a concert by the U. S. Marine Corps Band, Third Marine Air Wing, followed by an address of welcome by the Association's President, BrigGen M. S. White USAF (MC). The scientific program which followed was unusually instructive, consisting of 170 papers and panel discussions. The technical and scientific exhibits were stimulating. The Navy sponsored seven scientific exhibits, including an unusual exhibit on the Naval Flight Surgeon. Fourteen hundred and seventy-three members and guests registered for the 3-day meeting. Sixty-eight representatives of allied countries were present representing twenty-three countries. Reserve officers received point credits for attendance. Many Active, Reserve, and Retired officers greeted old acquaintances and made new friends.

The social events connected with the meeting and the program of the Wives' Wing were outstandingly successful. At their annual luncheon, the Wives' Wing presented a gold decorated scroll to LCDR Mary Keener MSC USN who was elected to honorary membership in the Wing.

The meeting was climaxed by the "Honors' Night" Dinner, following a pre-dinner reception given by the Litton Industries, Inc. Members and guests were informed of the election of Capt O. W. Chenault MC USN as First Vice President, to be President of the Association in its 33rd year—1962. The following awards were presented: The Lyster Award to Capt C. P. Phoebus MC USN, The Longacre Award to Capt G. E. Ruff USAF (MC), The Tuttle Award to Lawrence E. Lamb, M. D., The Liljencrantz Award to Capt E. L. Beckman MC USN.

The election of Fellows was announced as follows: Col H. V. Ellington USAF (MC), T. G. Hanks, M. D., B. Hannisdahl, M. D., BrigGen W. J. Kennard

USAF (MC), Ret., Capt R. B. Lautzenheiser MC USN, MajGen O. K. Niess, USAF (MC), Col J. M. Talbot USAF (MC), Capt F. K. Smith MC USN, Capt J. T. Smith MC USN, E. G. Wight, M. D.

Following the dinner, Jack Bailey provided light entertainment followed by a musical interlude by the Roger Wagner Chorale. Gen White, the retiring President received the Past President Pin and turned the administration of the Association to L. G. Lederer, M. D., the new President.

The 30th meeting was most successful. It is indeed unfortunate that all Naval Flight Surgeons, both Regular and Reserve, could not have attended.

The 31st meeting will be held at the Americana Hotel, Miami Beach, Fla. Naval Flight Surgeons and Medical Service Corps Allied Scientists are encouraged to make their plans to attend.

* * * * *

Permit No. 1048

OFFICIAL BUSINESS

DEPARTMENT OF THE NAVY
U. S. NAVAL MEDICAL SCHOOL
NATIONAL NAVAL MEDICAL CENTER
BETHESDA 14, MARYLAND

POSTAGE AND FEES PAID
NAVY DEPARTMENT